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09/871,421	05/31/2001	Todd R. Williams	56523USA1A.002	9279

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EXAMINER

FLETCHER III, WILLIAM P

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 07/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/871,421

Applicant(s)

WILLIAMS ET AL.

Examiner

William P. Fletcher III

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2003.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 14-23 and 35-50 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 51 is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, 13, 24-30, 32 and 34 is/are rejected.
- 7) ☒ Claim(s) 10, 12, 31 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Response to Amendment*

1. Receipt is acknowledged of applicant's amendment, timely filed 24 April 2003,  
5 made of record in this file as paper no. 10. This amendment changed the title, amended the  
specification, and added new claim 51.

### *Specification*

2. In view of applicant's amendment, the objection to the title, set-forth in paper no.  
10 5, is withdrawn.

### *Claim Analysis*

3. The examiner's analysis of the claims remains the same as set-forth at p. 5, ll. 1 –  
17 of paper no. 5. Please see the *Response to Arguments* section below for further discussion of  
15 claim terminology.

### *Claim Rejections - 35 USC § 102*

4. In view of applicant's arguments, the rejections under this heading, set-forth in  
paper no. 5, are withdrawn. While Delaney teaches that the master may have a metallized  
20 backing, the reference does not teach that the substrate, upon which the radiation-curable  
composition is coated, is a metal foil.

*Claim Rejections – 35 USC §§ 102/103*

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 5, 6, 11, 13, 27, 28, 32, and 34 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kerr et al. (WO 90/15673).

Kerr teaches a method of making a composite article comprising: depositing a radiation-curable composition onto the surface of a backing [p. 6, l. 33 – p. 7, l. 5]; contacting a master with a preformed surface under sufficient pressure to impart the pattern to the layer of composition [p. 4, ll. 8 – 14]; exposing the layer to sufficient radiation to cure it [p. 5, ll. 4 – 16]; and separating the cured polymer layer and the backing from the master [p. 7, ll. 27 – 33].

Kerr teaches that the backing may be a metallic sheet [p. 5, l. 33]. It is the examiner's position that the metallic sheet of Kerr is inclusive of a metal foil, as the term is defined by applicant. If, in the alternative, the metallic sheet is not inclusive of a metal foil, it would have been obvious to one of ordinary skill in the art to utilize a metal foil backing. One of ordinary skill would have been motivated to do so by the teaching of Kerr that "virtually any flat substrate" may be used and the fact that metal foil is well-known in the art as a backing for patterned, radiation-cured coating. It is the examiner's position that this backing is radiation transmissive, in the sense explained in paper no. 5.

It is the examiner's position that the pattern of cavities and depressions on the impressor belt, imparted to the coating, reads on applicant's claimed three-dimensional microstructure as

described at pp. 7 – 8 of the specification [p. 5, ll. 24 – 26]. The examiner notes that a “wide variety” of patterns may be imparted by the impressor, including *but not excluding*, patterns that may be interpreted as decorative [pp. 4 – 5, bridging paragraph]. Additionally, the textured coatings of Kerr also serve to *protect* the coated substrate [p. 2, ll. 4 – 6 and p. 6, ll. 1 – 4].

5 Consequently, the textured coatings of Kerr are not “merely decorative” but function also to protect.

Further, with respect to claim 27, it is the examiner’s position that this pattern also reads on the interactive functional discontinuities as defined at p. 7 of the specification. Applicant’s definition of this term is that the pattern be *capable* of forming cooperative mechanical  
10 arrangements. This is merely a statement of intended use. Since Kerr otherwise teaches all of applicant’s claimed method steps, and unless a critical step or steps are not recited in the claims, it is the examiner’s position that the pattern of Kerr is inherently “capable of forming cooperative mechanical arrangements with other complementarily shaped objects.”

Kerr explicitly teaches curing the coating by irradiating through the impressor belt [p. 5,  
15 ll. 4 – 6].

With respect to claims 6 and 28, insofar as the radiation-curable compositions are polymeric, they read on being oligomeric as defined at pp. 7 – 8 of the specification [p. 5, ll. 17 – 23].

With respect to claims 11, 13, 32, and 34, Kerr teaches that the radiation may be electron  
20 beam (EB) or ultraviolet (UV) [p. 5, ll. 4 – 16]. It is the examiner’s position that actinic radiation is inclusive of UV radiation according to the ordinary definition of the term “actinic

(rays)": Rays in the violet and ultraviolet regions which produce chemical changes [*Hackh's Chemical Dictionary*, 4<sup>th</sup> Ed., p. 15].

***Claim Rejections - 35 USC § 103***

5           7.       The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8.       Claim 7 is rejected under 35 USC 103(a) as being unpatentable over Kerr et al. (WO 90/15673).

10           The teaching of Kerr is detailed in the paragraphs above. This reference does not, explicitly, teach that, after contact with the master, at least one portion of the polymer layer will include a distal surface portion distally spaced at least 0.05 mm from an adjacent depressed surface portion.

15           From the teaching of Kerr, it is clear that the features of the pattern on the impressor belt are at the discretion of the artisan to achieve a desired result [c. 3, ll. 20 – 55]. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Kerr so as to space the lines of the pattern in any given manner and at any given spacing, including to at least 0.05 mm as claimed. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully yielding a desired pattern.

20           9.       Claims 1 – 4, 9, and 24 – 26, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delaney et al. (US 6,358,442 B1) in view of Schädlich et al. (US 3,897,247), and Wood (US 4,566,827).

Delaney teaches a method of making a composite article comprising: depositing a radiation-curable composition onto the surface of a backing [c. 2, ll. 42 – 47]; contacting a master with a preformed surface under sufficient pressure to impart the pattern to the layer of composition [c. 2, ll. 48 – 42]; exposing the layer to sufficient radiation (i.e., UV or EB) to cure it [c. 2, ll. 52 – 5 and Fig. 3]; and separating the cured polymer layer and the backing from the master [c. 2, ll. 55 – 57]. Although Delaney does not explicitly state that exposure is through the backing, it is clearly illustrated as such in Figs. 1B and 2A. Specifically, Delaney teach a method of making holographic composite articles.

Delaney does not explicitly teach: with respect to claims 1 and 24, that the backing is a metal foil backing, teaching, rather, a paper backing; and, with respect to claims 4 and 26, that the foil backing is selected from the group consisting of Cu, Al, Zn, Ti, Sn, Fe, Ni, Au, Ag, combinations and alloys thereof.

Schädlich teaches that, in the art of making composite holographic articles, it is well-known to utilize an aluminum foil backing [c. 1, l. 22]. Schädlich clearly teaches a support of an aluminum foil, which reads on applicant's definition of "metal foil" at p. 8 of the specification.

It would have been obvious to one of ordinary skill in the art to modify the process of Delaney so as to utilize Al foil as the metal foil backing, motivated by the express teaching of Schädlich that it is well-known to do so.

Wood is cited merely to show that electron beams will penetrate Al foil to cure a resin coated thereon [c. 3, ll. 57 – 60].

With respect to claims 2 and 25, insofar as the radiation curable compositions are polymeric, they read on being oligomeric as defined as defined at pp. 7 – 8 of the specification [c. 4, ll. 28 – 59].

With respect to claim 3, from the teaching of Delaney, it is quite clear that, while some particular dimensions of the pattern may be disclosed, the invention is not limited to these dimensions, and features of the pattern are at the discretion of the artisan to achieve a desired result [c. 3, ll. 20 – 55]. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Delaney so as to space the lines of the pattern in any given manner and at any given spacing, including to at least 0.05 mm as claimed. One of ordinary skill in the art would have been motivated to do so by the teaching of Delaney that the pattern may be modified at the discretion of the artisan to achieve a desired effect.

With respect to claims 9 and 30, Delaney teaches that the radiation may be UV or EB [Fig. 3 and c. 3, l. 60].

10. Claims 5 – 8, 11, 13, 27 – 29, 32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delaney et al. (US 6,358,442 B1) in view of Schädlich et al. (US 3,897,247), Wood (US 4,566,827), and Kerfeld (US 4,374,077).

The teaching of Delaney is detailed above. Specifically, Delaney teaches a method of making holographic composite articles [c. 1, ll. 5 – 16].

Delaney does not explicitly teach: with respect to claims 5 and 27, that the backing is a metal foil backing or that the radiation-curable composition is cured by irradiating through the



backing; and, with respect to claims 8 and 29, that the foil backing is selected from the group consisting of Cu, Al, Zn, Ti, Sn, Fe, Ni, Au, Ag, combinations and alloys thereof.

Schädlich teaches that, in the art of making composite holographic articles, it is well-known to utilize an aluminum foil backing [c. 1, l. 22]. Schädlich clearly teaches a support of an  
5 aluminum foil, which reads on applicant's definition of "metal foil" at p. 8 of the specification.

It would have been obvious to one of ordinary skill in the art to modify the process of Delaney so as to utilize Al foil as the metal foil backing, motivated by the express teaching of Schädlich that it is well-known to do so.

Wood is cited merely to show that electron beams will penetrate Al foil to cure a resin  
10 coated thereon [c. 3, ll. 57 – 60].

Kerfeld teaches that, in the art of curing a radiation-curable composition coated on a substrate in contact with a master, when the backing is transmissive to the curing radiation, curing may be effected by irradiating through the backing *or* through the master [c. 3, ll. 22 – 27]. Based on this teaching, one of ordinary skill in the art would have been motivated to modify  
15 the process of Delaney in view of Schädlich to irradiate through the master instead of through the Al foil backing. One of ordinary skill in the art would have been motivated to do so by the teaching of the equivalence of the two by Kerfeld. One of ordinary skill in the art would have had a reasonable expectation of successfully performing this modification based on the teaching of Wood.

20 With respect to claims 6 and 28, insofar as the radiation-curable compositions are polymeric, they read on being oligomeric as defined at pp. 7 – 8 of the specification [c. 4, ll. 28 – 59].

With respect to claim 7, it is clear from the teaching of Delaney, it is quite clear that, while some particular dimensions of the pattern may be disclosed, the invention is not limited to these dimensions, and features of the pattern are at the discretion of the artisan to achieve a desired result [c. 3, ll. 20 – 55]. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Delaney so as to space the lines of the pattern in any given manner and at any given spacing, including to at least 0.05 mm as claimed. One of ordinary skill in the art would have been motivated to do so by the teaching of Delaney that the pattern may be modified at the discretion of the artisan to achieve a desired effect.

With respect to claims 11, 13, 32, and 34, Delaney teaches that the radiation may be electron beam (EB) or ultraviolet (UV) [Fig. 3 and c. 3, l. 60]. It is the examiner's position that actinic radiation is inclusive of UV radiation according to the ordinary definition of the term "actinic (rays)": Rays in the violet and ultraviolet regions which produce chemical changes [*Hackh's Chemical Dictionary*, 4<sup>th</sup> Ed., p. 15].

#### *Allowable Subject Matter*

11. Claims 10, 12, 31, and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: The prior art neither teaches nor reasonably suggests the methods of independent claims 1, 5, 24, and 27, in which the radiation is thermal radiation.

13. Claim 51 is allowed.

14. The following is an examiner's statement of reasons for allowance: The prior art neither teaches nor reasonably suggests the claimed method in which the radiation is thermal radiation.

15. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Response to Arguments*

16. Applicant's arguments with respect to claims 1 – 13 and 24 – 25 (paper no. 10) have been considered but are moot in view of the new ground(s) of rejection. As required, those arguments presented by applicant which are still relevant to any references being applied are addressed below.

17. The examiner will now address the terms "precisely shaped and located functional discontinuities," "precisely shaped interactive functional discontinuities," and "large scale predictable dimensional stability."

With respect to the first term, the examiner acknowledges that applicant's definition excludes purely decorative patterns. Neither Delaney nor Kerr teach purely decorative patterns. The former teaches patterns that are also functional, i.e., serve other than a decorative purpose. Referring to Fig. 7, the image reads "VOID." Clearly this is not a purely decorative image, functioning rather to alert the user to potential counterfeit or illegal duplication. Such a pattern reads on an "original, non-random, precise functional shapes which are precisely located relative

to each other.” The latter teaches that the coatings not only decorate the substrate, but protect it as well. Consequently, Kerr’s coating is not purely decorative either.

With respect to the second term, applicant has defined such discontinuities as being “capable of forming cooperative mechanical arrangements with other complementarily shaped objects.” As noted above, this is merely a statement of intended use. Since the above references and combinations of references otherwise teach all of applicant’s claimed method steps, and unless a critical step or steps are not recited in the claims, it is the examiner’s position that the patterns taught are inherently “capable of forming cooperative mechanical arrangements with other complementarily shaped objects.”

With respect to the third and last term, the examiner notes that applicant has defined “large scale predictable dimensional stability” as “the ability of a segment of shaped sheet-like substrate to retain its predicted dimensions after being subjected to a heated environment of 150°C or less for 60 minutes or less and then returned to ambient temperature.” As noted in paper no. 5, this reads on ambient conditions. Take ambient temperature at 25°C. This temperature is less than 150°C. If the segment is held at 25°C, then it has been heated to a temperature of 150°C or less. Further, since 60 minutes or less is inclusive of 0 seconds, then a segment that is dimensionally stable when not heated at all meets this definitions. Accordingly, since applicant’s definition is so broad, and reads on an article that is stable at ambient conditions, it is the examiner’s position that all of the articles formed above, inherently meet this condition since the references do not disclose taking special precautions to preserve stability under normal (i.e., ambient) operating conditions.

18. Lastly, the examiner notes that Schädlich teaches both Al-coated substrates and Al-foil [see c. 1, ll. 21 – 22: “electroconductive supporting material”].

***Conclusion***

5 19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (703) 308-7956. The examiner can normally be reached on Monday through Friday, 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Shrive P. Beck can be reached on (703) 308-2333. The fax phone numbers for the  
10 organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

William P. Fletcher III  
Examiner  
Art Unit 1762

15

**WPF**

July 7, 2003

  
**TIMOTHY MEEKS  
PRIMARY EXAMINER**